

**Notice of Allowability**

Application No.

10/029,530

Examiner

Terry L. Englund

Applicant(s)

HIROSE ET AL.

Art Unit

2816

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE/IDS (Aug 18, 2005) and Interview (Sep 14, 2005).
2. ☒ The allowed claim(s) is/are 1, 4-15, and 17-21 (now renumbered as 1,11,2,12,3-7,13,8-10,14-18, respectively for printing purposes).
3. ☒ The drawings filed on 25 May 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 08182005
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 09142005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
TIMOTHY P. CALLAHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with the applicants' representative James A. Pinto (Reg. No. 40,774) on Sep 14, 2005.

The application has been amended as follows:

Claim 16: cancelled in its entirety.

The claim was cancelled after reconsidering the claimed limitations with respect to several prior art references (explained later).

### **RESPONSE TO RCE/IDS**

The RCE and IDS submitted on Aug 18, 2005 were reviewed and considered with the following results:

The RCE was approved and entered.

After reviewing all the prior art references cited on the IDS, and reconsidering the claimed limitations, it was determined the reference of Hoff et al. read on claim 16. Using Fig. 2 of the reference as an example, transistors M8, M13 and M30 (or M14) are coupled in series between high voltage signal Vcc and supply ground voltage line Vss. These transistors correspond to the first-third switches recited within claim 16, wherein third switch M30 (or M14) is an n-channel transistor with its output coupled to Vss, and first switch M8 is a p-channel transistor with its gate coupled to one type of a positive supply voltage signal (i.e. provided

Art Unit: 2816

between M1 and M2). When all three of these series coupled switches are on, they effectively discharge high voltage signal Vcc to Vss. Therefore, the applicants' representative was contacted and claim 16 was discussed with respect to Hoff's reference. Approval was given to cancel claim 16 by an Examiner's Amendment.

Of the other eleven references cited on the IDS, none of them clearly shows or discloses all the limitations recited within any one of the present application's independent claims. The references lack: 1) the ability to have all three switches (understood to be coupled in series between a high voltage and a supply line (e.g. ground) to be on (at the same time) to discharge a high voltage to ground, and at least one other limitation recited within the claims (e.g. the gate of a p-channel transistor is coupled to a positive voltage, an n-channel transistor is coupled to ground, or a fourth switch is used for clamping); or 2) a method utilizing a clamping device that would be activated when the high voltage is discharged down to a level approaching the supply line. For example, when two series coupled transistors (e.g. switches), of the opposite conductivity type, receive the same control signal, one will be off when the other is on. Therefore, those transistors can never be on at the same time to allow discharge of the high voltage through them to the supply line. For example, see references 2 by Ong (Fig. 5: M25/M27 and/or M26/M28); and 6 by Gradinariu (Fig. 3: 22/26).

When reviewing the references cited on the IDS, it was noted that Fig. 4 of reference 12 (i.e. by Mnich) corresponds to the applicants' own Fig. 6, which shows a circuit for generating the voltage VDROD.

### **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

Art Unit: 2816

None of the prior art references reviewed and considered shows or discloses the high voltage discharging circuit (or method) as recited within the claims. More specifically, none of the references clearly shows or discloses: 1) the fourth switch for clamping the high voltage signal to ground as recited within claims 1 (upon which claims 5, 7-11, and 13-15 depend), 12, and 17; 2) the fourth and fifth switches as recited within claim 4; 3) the fourth switch and control logic as recited within claim 6; or 4) a method utilizing a clamping device that senses the discharge, and activates when the high voltage signal approaches the supply line voltage level as recited within claim 18 (upon which claims 19-21 depend). Typically, a high voltage is clamped if its predetermined level is exceeded (or about to be exceeded). Therefore, the clamping action is activated to help maintain a voltage at or near its predetermined level. It is not activated when the discharging high voltage approaches a level of the supply line that the high voltage is discharging to. Since there is no strong motivation to modify or combine any prior art reference(s) to ensure a circuit for discharging a high voltage comprises at least the first-third switches, and any of the above limitations with respect to the apparatus claims, or the clamping/activating step as recited within claim 18, the claims are deemed patentably distinct over the prior art of record.

Claims 1, 4-15, and 17-21 are allowed, and have been renumbered as 1, 11, 2, 12, 3-7, 13, 8-10, and 14-18, respectively for printing purposes. The renumbering takes into account the cancellation of claims 2-3, and 16, and also regroups the claims together with respect to their independent claim (e.g. claims 5, 7-11, and 13-15 all depend on claim 1).

**PRIOR ART**

The two references, cited on the accompanying PTO-892 are for interest and documentation purposes only, were found during the recent update search. Fig. 3 of Lin et al. could have been used to reject claim 16 if that claim had not been cancelled. The circuit shows first switch 21' coupled to high voltage signal VPP (via 20'), wherein p-channel transistor 21' has its gate coupled to positive voltage signal Vcc; second switch 32'/33' with its input 44 coupled to output 40 of first switch 21'; and third switch 34', which is an n-channel transistor having its output coupled to ground. When VPP is sufficiently high, all three switches are on, allowing high voltage signal VPP to effectively discharge to ground because they are coupled in series between VPP and ground. The reference of Byeon et al. shows series coupled switches in Fig. 4 wherein first switch 434 (a p-channel transistor) is coupled to second switch 440/442, which in turn is coupled to third switch 444 (an n-channel transistor coupled to ground GND). However, first switch 434 will be on when it receives a low on its gate. Although 124,126 are activated to help clamp VPP to a level, 468 is not activated unless the voltage at node A is sufficiently high, which is not approximately the level of supply line GND. Therefore, for the same reasoning as previously described, these references do not meet all the claimed limitations recited within any one of the present application's independent claims.

Any comments considered necessary by the applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2816

Any inquiry concerning this communication, or previous communications, from the examiner should be directed to Terry L. Englund whose telephone number is (571) 272-1743.

The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (571) 272-1740.

The new central official fax number is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1562.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terry L. Englund

14 September 2005